Executive Summary

This Iowa Statewide Interoperable Radio System (ISIRS) Feasibility Study was commissioned with the following goals:

- Assess Existing Statewide Emergency Communications Infrastructure (Voice, Data, Video, 9-1-1)
- Present Conceptual System Design(s) for a Statewide Solution, using a standards-based solution which provides integrated Voice and Data, and offers Video.
- Develop a Migration Path for Statewide Interoperable Communications System Solution

Assessing the current state of emergency communications in Iowa was achieved using a detailed survey instrument, sent to over 200 users of such equipment throughout the state. The responses obtained represented 12 cities, 72 counties, and 8 state agencies. The results are summarized in this report.

CTA used the results of the surveys and meetings held in Iowa to analyze and evaluate a number of approaches to statewide interoperability.

A potential migration path was developed, given current state of communications systems. The migration path could be adjusted according to funding and local participation. Probable cost estimates were developed according to the system design and migration approach.

Since the disparate existing state systems were designed and implemented, there have been many technology advances. In particular, a Federal and Public Safety endorsed standards-based interoperability protocol has been developed by the TIA/EIA and implemented by multiple vendors (the Project 25 standard, or "P25").

Iowa's existing emergency communications radio infrastructure is comprised of outdated technology. Much of the VHF equipment, if not upgraded, risks becoming unusable after 2013 due to FCC narrowbanding requirements. There are numerous disparate systems implemented across the state, and while various technologies are used to attempt to provide interoperability, the result is inconsistent and often non-interoperable systems are working side-by-side. Of particular concern was the number of survey respondents (see SECTION 1.2) who were not aware of the need to upgrade VHF and UHF operations to narrowband by 2013.

Good efforts have been made to modernize the E-911 systems across Iowa, with the result that these systems are generally much newer than the mobile radio infrastructure. As telecom technology has evolved, and cellular phone usage has significantly increased in the last 5 – 10 years, there is a need to upgrade some 9-1-1 centers for wireless 9-1-1 location capability. In the near future, VoIP standards-based technology will be a requirement.

The State of Iowa needs to replace, not upgrade, the State Patrol and DOT radio system infrastructure in order to achieve the goals identified for ISIRS. This can be done in a manner that will allow localities to share infrastructure and provide true over-the-air interoperability among users on the system. Key recommendations made in this feasibility study include:

- Utilize the new 700 MHz band, which will provide the quantity of structured channels needed for a statewide interoperable radio system. Users could share in the costs of the infrastructure, while maintaining independent operations via their assigned talk-groups.

- Implement a standards-based P25 trunking system for interoperability, expandability, feature options, and competitive procurement. With trunking technology, different user groups normally operate independently, but in the event of an emergency, different groups and agencies can communicate at scene, radio-to-radio.

- Implement a phased approach for the system roll-out, consistent with funding and desired prioritization of regional areas.

- Invite localities to join the ISIRS network concurrent with the phased build-out for state agencies. Localities can bring shared resources to the network, and will have the benefits of voice and data plus true interoperability with other ISIRS users.

- Implement digital microwave as the backbone data transport network, and consider connectivity to the ICN and/or leased line in selected areas for back-up capability and improved reliability.

- Use Gateway technologies to insure that agencies using VHF, UHF and non-P25 800MHz will be able to interoperate with ISIRS via selected channels or talk-groups.

- Encourage use of multi-protocol P25 700/800 MHz radios by localities or agencies that continue to use their existing 800 MHz trunked radio networks to allow them to achieve direct radio-to-radio interoperability with ISIRS users.

- Plan to implement 700MHz broadband data and selectively utilize Wi-Max or Wi-Fi technologies for high speed mobile data applications. Monitor FCC rulings in the next year or two as these will undoubtedly affect the use of this band for mobile data. Incorporating broadband data will allow for wireless downloading/uploading of large graphic files (e.g. mug shots, building layouts) for on-scene access, as well as at-scene video and intranet/internet (encrypted links) access.

- Continue to support the upgrade of E-911 PSAP centers for wireless location capability and new IP based standardized interfaces.

A three phase approach is recommended for the system implementation, corresponding to DPS/MVE Dispatch Areas 1, 2, and 3. Each phase is estimated to require 18 to 24 months for implementation. The total implementation time may be reduced with parallel efforts for the three phases.

A competitive estimate of probable costs (the details and assumptions are in SECTION 7) was performed for each of the three phases for both state requirements and projected locality additions, with the results summarized below:

Phase	State	Localities
Phase 1, Area 1	$ 39,048,800	$ 31,637,800
Phase 2, Area 2	$ 39,528,600	$ 42,567,300
Phase 3, Area 3	$ 48,571,800	$ 60,068,300
TOTALS	$ 127,149,200	$ 134,273,400

The ISIRS approach will increase capacity, enhance coverage, provide upgraded mobile data capabilities, and create alternative disaster recovery paths. Standards based radio equipment combined with an IP data backbone will create an integrated and seamless interoperable voice and data communications system designed to meet the needs of ISP,

IDOT, and all state agencies requiring highly reliable, fault tolerant, wireless emergency communications. By providing a shared system infrastructure, the multiple agencies engaged in public safety, protection, and services will be able to interoperate seamlessly. Cost efficiency in a shared network will result from the economy of scale.

Any locality or federal agency using similar standards-based P25 technology will have direct interoperability with ISIRS. In addition, with the use of communications gateway technologies, local government systems will be able to communicate with any state agency as designated in emergency situations.